

In areas where the oil saturation in the Sisquoc is lower than 45%, there is a higher likelihood of formation water sample collection. In these areas such as the West Area, the samples collected without the introduction of steam are considered to be formation water samples. The Sisquoc Formation below the Upper Confining Layer water quality (for the purpose of the proposed Aquifer Exemption Expansion in the Sisquoc Formation below the Upper Confining Layer) is considered to be variable within each Area of Cat Canyon Oil Field based on past production practices and quantities of steam condensate returned as production fluid. The individual areas and ranges of water quality are discussed briefly in the following section and in more detail in the **Appendix II, Formation Water Quality Study** of the proposed Aquifer Exemption Expansion Study **Appendix 6-1, Water Treatability Study**.

**Table 5.1-5, Summary of Sisquoc Formation below the Upper Confining Layer Water Reviewed Data by Area** below lists the water quality in TDS based on statistical analysis by Production Area. The table indicates the maximum deviation as well as the mean. Although the connate Sisquoc Formation below the Upper Confining Layer water TDS is most likely more than 10,000 mg/L, the samples that are able to be collected which include the steam condensate and the reinjected produced water, (which also includes the steam condensate), at the low end of the range may be less than 10,000 mg/L thus requiring an exemption expansion proposal.

Table 5.1-5: Summary of Sisquoc Formation below the Upper Confining Layer Water Reviewed Data by Area, (mg/L)											
Area/ Formation			TDS	B	Na	CL	SO4	HCO3	Ca	K	Mg
Sisquoc	All Sisquoc Data	Mean	9990	26	1151	3266	116	4680	110	47	214
		Std. Dev.	8028	9	721	2812	218	5196	51	59	177
		Count	38	28	28	36	27	29	9	27	27
	Sisquoc: Post Steaming Production	Mean	5862	26	961	1924	75	2209	104	41	247
		Std. Dev.	2600	9	426	1200	46	1572	50	60	179
		Count	27	25	22	27	22	22	8	22	21
	Sisquoc: Native Formation	Mean	19862	34	2311	7436	295	11004	113	71	91
		Std. Dev.	7558	17	1612	2269	500	6143	67	46	113
		Count	12	4	7	10	5	8	2	6	7
Other Areas	Central	Mean	10745	28	1641	4001	47	5539	29	36	21
		Std. Dev.	3815	20	801	1420	22	2496	8	24	17
		Count	14	11	11	11	11	11	4	11	8
	East	Mean	7668	12	1263	2740	27	3528	41	16	75
		Std. Dev.	2547	12	768	1019	20	1806	12	11	51
		Count	17	9	14	14	14	14	2	13	13
	West	Mean	22007	42	876	8063	147	12252	15	50	49
		Std. Dev.	5280	29	442	2096	103	3700		28	94
		Count	9	5	8	8	8	8	1	8	5
	Gato Ridge	Mean	21000								
		Std. Dev.									
		Count	1								